User Guide

XTP Extender

XTP T FB 202

Two-input Universal Floor Box
Twisted Pair Transmitter

Extron Electronics
INTERFACING, SWITCHING AND CONTROL

68-2374-01 Rev. B
04 14

Safety Instructions

Safety Instructions • English

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ATTENTION: This symbol, ⚠, when used on the product, is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

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ATTENTION : Ce pictogramme, ⚠, lorsqu'il est utilisé sur le produit, signale à l'utilisateur des instructions d'utilisation ou de maintenance importantes qui se trouvent dans la documentation fournie avec le matériel.

Pour en savoir plus sur les règles de sécurité, la conformité à la réglementation, la compatibilité EMI/EMF, l'accessibilité, et autres sujets connexes, lisez les informations de sécurité et de conformité Extron, réf. 68-290-01, sur le site Extron, **www.extron.com**.

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VORSICHT: Dieses Symbol ⚠ auf dem Produkt soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

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Korean

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ATTENTION: The Twisted Pair Extension technology works with shielded twisted pair (STP) cables **only**. To ensure FCC Class A and CE compliance, STP cables and STP connectors are also required.

For more information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the "**Extron Safety and Regulatory Compliance Guide**" on the Extron website.

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Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

WARNING: A warning indicates a situation that has the potential to result in death or severe injury.

ATTENTION: Attention indicates a situation that may damage or destroy the product or associated equipment.

NOTE: A note draws attention to important information.

TIP: A tip provides a suggestion to make working with the application easier.

Software Commands

Commands are written in the fonts shown here:

```
^AR Merge Scene,,Op1 scene 1,1 ^B 51 ^W^C
[Ø1] R ØØØ4 ØØ3ØØ ØØ4ØØ ØØ8ØØ ØØ6ØØ [Ø2] 35 [17] [Ø3]
```

Esc X1 * X17 * X20 * X23 * X21 CE ←

NOTE: For commands and examples of computer or device responses mentioned in this guide, the character "Ø" is used for the number zero and "O" represents the capital letter "o."

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 2Ø8.132.18Ø.48: bytes=32 times=2ms TTL=32
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx –t
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.

Click the **OK** button.

Specifications Availability

Product specifications are available on the Extron website, **www.extron.com**.

Contents

Introduction 1

About this Guide 1
About the XTP T FB 202 1
Key Features 2

Installation 4

Installation Overview 4
Adapter Plates 5
Side Panel Connectors 7
Connectors Below the Adapter Plates 7
Connectors Above the Adapter Plates 8
Top Panel Features 9
Mounting 10
Ackermann GB3 (OBO Bettermann) floor box 10
MK Electric CableLink Plus Single Pan floor box 11
MK Electric CableLink Plus Modular floor box 11
Electraplan or PUK floor box 12
Connection and Wiring Details 12
HDMI Connection 12
TP Cable Termination and Recommendations 13
RS-232 and IR Over XTP Communication 14
Power Connection 15

Operation 17

Switch Modes 17
EDID 17
Reset Modes 17

SIS Configuration and Control 18

Host Device Connection 18
SIS Programming Guide 18
Host-to-Device and Device-to-Host Communication 18
Device-Initiated Message 18
Error Responses 19
Using the Command and Response Tables for SIS Commands 19
Symbol Definitions 19
Command and Response Tables for SIS Commands 20
Input Commands 20
Audio Configuration Commands 20
Picture Adjustment Commands (Analog Only) 21
Presets Commands 21
EDID Commands 22
Advanced Configuration Commands 22

XTP System Configuration Software 23

Installing the XTP System Configuration Software 23
Using the XTP System Configuration Software 24
Connections 24
Top Menu 25
Device Settings 28

Reference Information 36

Updating Firmware with Firmware Loader 36
Downloading Extron Firmware Loader 36
Installing Firmware Loader 37
Downloading Firmware 38
Installing Firmware with Firmware Loader 39

Introduction

This section contains general information about this guide and the Extron XTP T FB 202 Universal Floor Box Twisted Pair Transmitter, and selected device features. Topics in this section include:

- **About this Guide**
- **About the XTP T FB 202**
- **Key Features**

About this Guide

This guide contains installation, and control procedures, and reference information for the XTP T FB 202 Universal Floor Box Twisted Pair Transmitter. In this guide, the terms "XTP T FB 202" and "transmitter" are used interchangeably to refer to the XTP T FB 202 Universal Floor Box Twisted Pair Transmitter.

About the XTP T FB 202

The Extron XTP T FB 202 is a two-input XTP transmitter that sends HDMI or digitized analog video, audio, bidirectional RS-232 and IR, and Ethernet up to 330 feet (100 m) over a single shielded twisted pair (STP) cable. It is HDCP compliant, and supports 1080p/60 Deep Color and 1920x1200 signals. The XTP T FB 202 works with XTP Systems for signal distribution and long-distance transmission between remote endpoints. It is made specifically to fit into floor boxes from OBO Bettermann, MK by Honeywell, Electraplan, and PUK.

The XTP T FB 202 can be powered locally or remotely through an Extron Power Injector or XTP matrix switcher (see **Power Connection** on page 15).

The XTP T FB 202 can be configured and controlled with Extron Simple Instruction Set (SIS) commands (see **SIS Configuration and Control** on page 18) or the XTP System Configuration Software (see **XTP System Configuration Software** on page 23).

The following diagram shows a typical application of the XTP T FB 202.

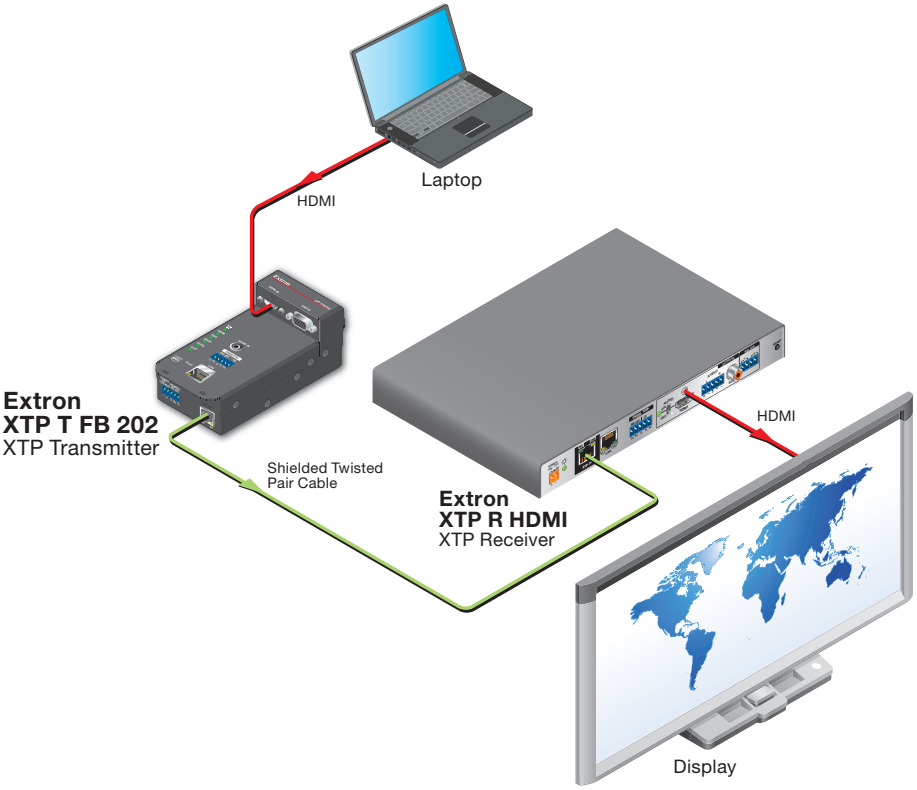


Figure 1. Typical XTP T FB 202 Application

Key Features

European floor box mountable — Provides a flexible, floor box mounting solution that is compatible with offerings from OBO Bettermann - GB2 and GB3 slots, MK by Honeywell, Electraplan, and PUK.

Reliable cable infrastructure — Transmits HDMI or digitized analog video, audio, bidirectional RS-232 and IR, and Ethernet up to 330 feet (100 m) over a single CATx cable.

Inputs — Include one HDMI input and one VGA input.

Support for computer-video to 1920x1200, including HDTV 1080p/60 Deep Color and 2K signals — Supports digital signal transmission up to 330 feet over a single twisted pair cable, maintaining superior image quality at the highest resolutions.

Shielded twisted pair cable compatibility — Optimized for use with common shielded twisted pair (STP) cable types. XTP systems fully support a maximum transmission distance of 330 feet (100 meters) for all compatible resolutions when used with shielded twisted pair cable. Shielded twisted pair cabling with solid center conductor sizes of 24 AWG or better is recommended for optimal performance.

Digital conversion of analog video and audio input signals — Digitizes analog signals, ensuring that a reliable, high quality digital video signal is sent to the output destination.

Auto-input switching — Automatically switches to the highest or lowest priority input with an active video signal for simplified operation.

Bidirectional RS-232 and IR insertion — Allows a remote display to be controlled without the need for additional cabling through bidirectional RS-232 control and IR signals inserted into the XTP output.

HDMI specification features — Support data rates up to 6.75 Gbps, Deep Color up to 12-bit, 3D, HD lossless audio formats, and CEC.

HDCP-compliance — Ensures display of content-protected media and interoperability with other HDCP-compliant devices.

EDID Minder — Automatically manages EDID communication between connected devices to ensure that all sources properly power up and reliably display content.

Key Minder — Authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching in professional AV environments, while enabling simultaneous distribution of a single source signal to one or more displays.

Ethernet extension — Centralized 10/100 Ethernet communication can be implemented via an Ethernet pass-through port to reduce the amount of independent network drops required within a system.

Remote power capability — To simplify integration, the XTP T FB 202 can be powered by an XTP CrossPoint Matrix Switcher or an XTP Power Injector.

Multiple embedded audio formats — Compatible with a broad range of multi-channel audio signals, providing reliable operation with HDMI sources.

Selectable analog stereo audio input embedding — Supports unbalanced audio for extended transmission. This feature enables direct connection of separate stereo audio signals from a laptop, Blu-ray Disc™ player, or other device.

RS-232 control — Features an RS-232 serial port for control and configuration.

Installation

This section contains information for installing, connecting, and wiring the XTP T FB 202. Topics in this section include:

- **Installation Overview**
- **Adapter Plates**
- **Side Panel Connectors**
- **Top Panel Features**
- **Mounting**
- **Connection and Wiring Details**

Installation Overview

Install the XTP T FB 202 into an Ackermann GB3 (OBO Bettermann), MK Electric CableLink Plus Modular, MK Electric CableLink Plus Single Pan, Electraplan, or PUK floor box.

CAUTION: Risk of personal injury. Failure to check the items listed below may result in personal injury.

ATTENTION: Failure to check the items listed below may result in property damage.

1. Check that the installation of the floor box meets government, building, electrical, and safety codes.
2. Install the floor box according to the instructions of the manufacturer.
3. Prepare and pull the cables through the floor box.

   TIP: Secure cables with clamps or ties to provide strain relief.

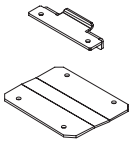
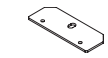
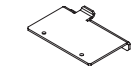
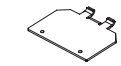
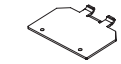
4. Trim back and insulate shields with heat shrink.

   ATTENTION: To prevent short circuits, the outer foil shield can be cut back to the point where the cable exits the cable clamp. Both braided and foil shields should be connected to an equipment ground at the other end of the cable.

5. Install the appropriate adapters to the desired position in the floor box (see **Adapter Plates** on page 5).
6. Connect cables to the side panel connectors located below the adapter plates (see **Connectors Below the Adapter Plates** on page 7).
7. Mount the XTP T FB 202 to the floor box (see **Mounting** on page 10).
8. Connect appropriate devices to the remaining side (see **Connectors Above the Adapter Plates** on page 8) and top (see **Top Panel Features** on page 9) panel connectors.
9. Configure the XTP T FB 202 with SIS commands (see **SIS Configuration and Control** on page 18) or the XTP System Configuration Software (see **XTP System Configuration Software** on page 23).

Adapter Plates

Each floor box model requires a specific pair of provided adapter plates (see the table below for the appropriate adapter plates to use with certain floor boxes).

Floor Box	Adapter Plate	Example
Ackermann GB3 (OBO Bettermann)	995241 995242	
MK Electric CableLink Plus Single Pan	995243	
MK Electric CableLink Plus Modular	995244	
Electraplan	995300	
PUK	995300	

NOTE: The 995242 adapter plate is only used for position 2 of the Ackermann GB3 (OBO Bettermann) floor box.

1. Determine the position in the floor box to install the XTP T FB 202. Each compatible floor box contains three positions to install devices (see figure 2).

   NOTE: For the MK Electric CableLink Plus Single Pan floor box, do not use position 2.

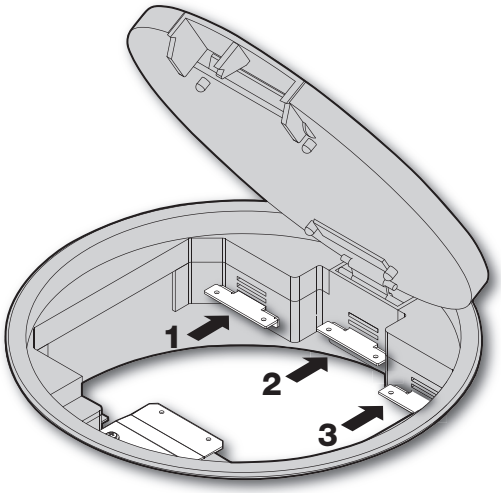


Figure 2. Example of Positions in a Floor Box (Ackermann GB3 [OBO Bettermann] Shown)

2. Insert the top flange of the adapter plate into a mounting slot that is no higher than the third slot from the top.

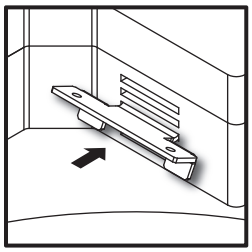


Figure 3. Installing an Adapter Plate (995241 Shown) into a Mounting Slot

NOTES:

- Install adapter plates in mounting slots of the same position in the floor box.
- The MK Electric CableLink Plus Single Pan floor box does not have mounting slots. Use a mounting screw to secure the large mounting hole of the 995243 adapter plate to the mounting hole of the floor box position (see figure 4).

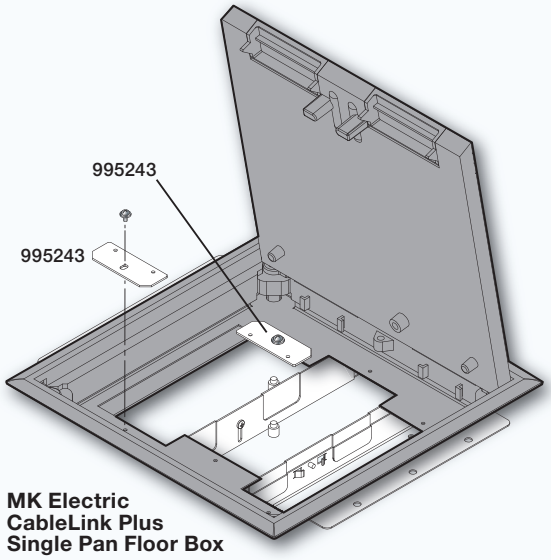


Figure 4. Installing 995243 Adapter Plates

3. Rotate the adapter plate down so the bottom flange rests against the wall of the floor box.

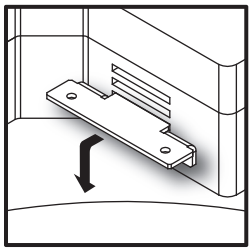


Figure 5. Fixing the Adapter Plate (995241 Shown) in Place

4. If the desired position is position 2 of the Ackermann GB3 (OBO Bettermann) floor box, use the provided screws to secure the 995242 adapter plate to a 995241 adapter plate.

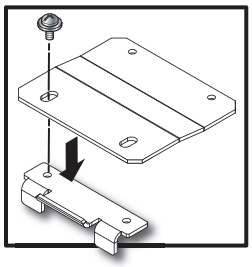


Figure 6. Installing the 995242 Adapter Plate to a 995241 Adapter Plate

Side Panel Connectors

Connectors Below the Adapter Plates

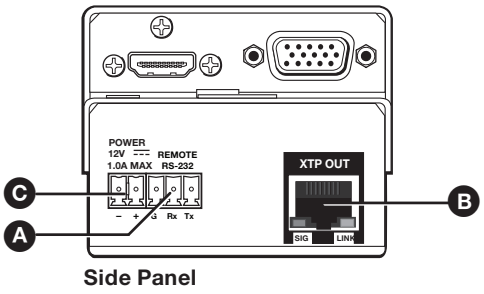


Figure 7. Side Panel Connectors Under the Adapter Plates

Ⓐ **Remote RS-232 connector** — Connect a host device to the 3.5 mm, 3-pole captive screw connector for serial control of the transmitter. Wire the connector as shown in figure 8.

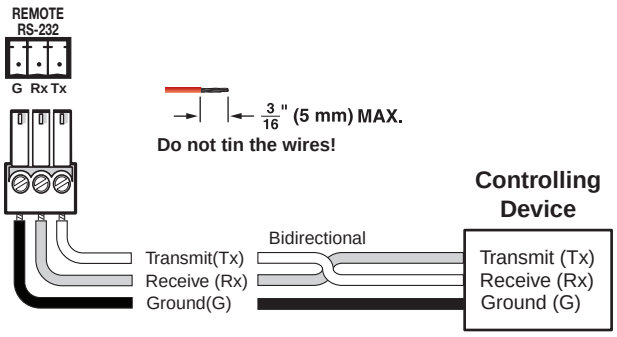


Figure 8. RS-232 Wiring

B **XTP connector** — Connect a twisted pair cable to the RJ-45 connector labeled XTP Out and the XTP input port on another XTP device to pass all signals (see **TP Cable Termination and Recommendations** on page 13). This cable carries the following signals:

- Digital video
- Digital audio
- Bidirectional RS-232 and IR commands
- Remote power
- Ethernet communication
- System communication

Signal LED indicator — Lights green when the transmitter outputs a video signal or a test pattern.

Link LED indicator — Lights yellow when XTP devices are connected and communication is established.

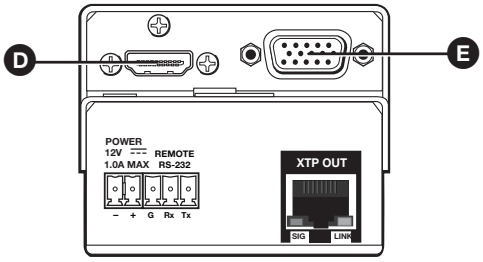
ATTENTION:

- Do not connect this connector to a computer data or telecommunications network.
- XTP remote power is intended for indoor use only. No part of the network that uses XTP remote power should be routed outdoors (see **Remote power** on page 16).

C **Power connector and LED** — Connect an external power supply to the 3.5 mm, 2-pole captive screw connector (see **Power Connection** on page 15). The Power LED lights to indicate the device is receiving power.

NOTE: The XTP T FB 202 can be powered remotely (see **Remote power** on page 16).

Connectors Above the Adapter Plates



Side Panel

Figure 9. Side Panel Connectors Above the Adapter Plates

D **HDMI connector** — Connect a digital video source device to the female HDMI connector. It can accept HDMI, DVI (with an appropriate adapter), or dual mode DisplayPort video sources.

NOTES:

- The maximum HDMI cable length is 15 feet.
- Use an Extron LockIt lacing bracket to secure the HDMI connector to the device (see **HDMI Connection** on page 12).

E **Analog video connector** — Connect a video source to the female 15 pin HD connector. It accepts RGBHV video.

Top Panel Features

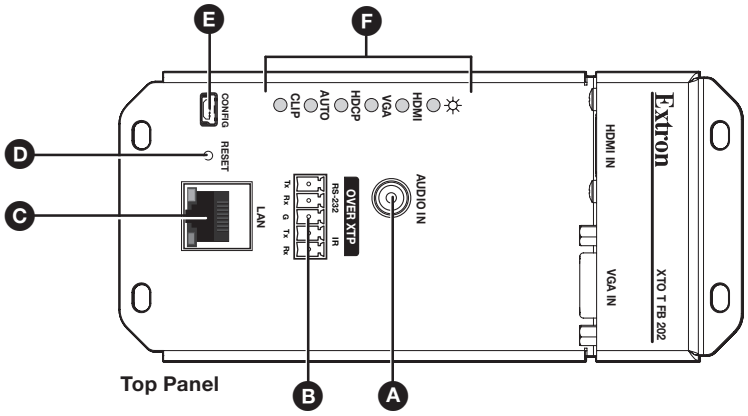


Figure 10. Top Panel Features

A **Audio connector —** Connect an analog audio source to the 3.5 mm tip-ring-sleeve (TRS) jack. Both video inputs can share this audio input.

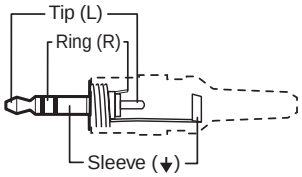
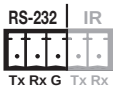


Figure 11. Wiring for the TRS Connector

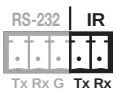
By default, audio input is selected automatically (see **Audio input selection** SIS commands on page 20 to manually select audio inputs). When the HDMI input is selected with automatic audio input selection, the transmitter prioritizes embedded digital audio. The following table shows the audio format that is sent over the XTP connection when a specific audio format is not specified.

Selected Video Input	HDMI Embedded Audio Present	Analog Audio Present	Audio Sent Over XTP
VGA	N/A	Yes	Analog audio
VGA	N/A	No	No audio
HDMI	Yes	No	HDMI embedded audio
HDMI	Yes	Yes	HDMI embedded audio
HDMI	No	Yes	Analog audio
HDMI	No	No	No audio

B **RS-232 Over XTP port** — To pass bidirectional serial or other control signals between XTP-compatible devices, connect a control device to the 5-pole captive screw connector. The port includes only the 3 poles labeled "RS-232."



IR Over XTP port — To transmit and receive IR signals (up to 40 kHz), connect a control device to the 5-pole captive screw connector. This port only includes the 2 poles labeled "IR" and shares the ground pole with the RS-232 port.



NOTE: RS-232 and IR data can be transmitted simultaneously (see **RS-232 and IR Over XTP Communication** on page 14 for wiring details).

Ⓒ **LAN connector** — Connect a control device or device to be controlled to this LAN connector for 10/100 Ethernet communication through this pass-through port. LEDs on this connector indicate link and activity status.

Ⓓ **Reset button** — Press and hold to reset the device (see **Reset Modes** on page 17).

Ⓔ **Config port** — Connect a host device to the front panel mini USB B configuration port.

Ⓕ **LED indicators:**

Power LED indicator — Lights when power is applied.

HDMI LED indicator — Lights when an HDMI input signal is detected.

VGA LED indicator — Lights when a VGA input signal is detected.

HDCP LED indicator — Lights when the HDMI input signal is encrypted.

Auto LED indicator — Lights when the device is in auto switch mode.

Clip LED indicator — Lights when the analog audio input signal remains above -3 dBFS. It remains lit for 200 ms after the signal falls below -3 dBFS.

Mounting

Before mounting the floor box, consider the mounting location and prepare the surface as necessary.

1. If not already completed, install the appropriate adapter plates in the desired position and mounting slots (see **Adapter Plates** on page 5).
2. Align the screw holes on the XTP T FB 202 with the screw holes on the adapter plates.
3. Using the provided self-threading screws and washers, secure the XTP T FB 202 to the adapter plates (see figures 12 though 15).

Ackermann GB3 (OBO Bettermann) floor box

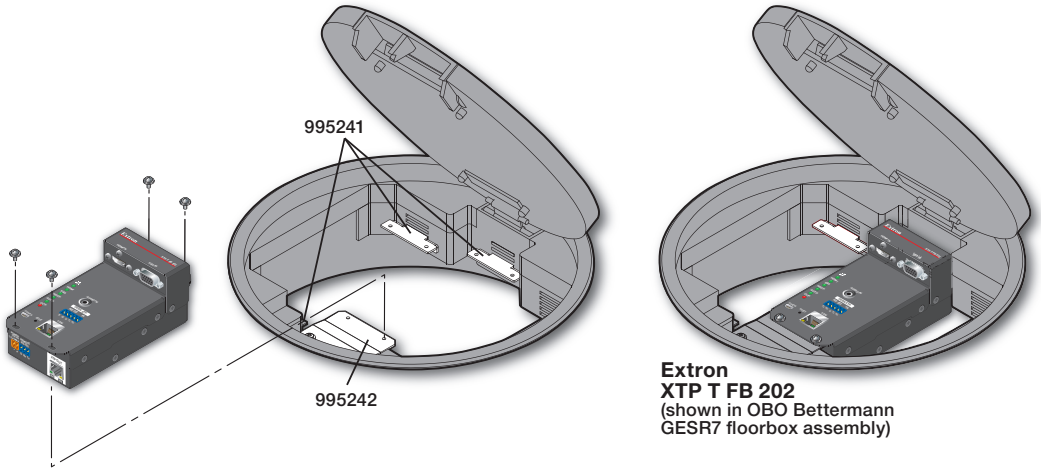


Figure 12. Mounting the XTP T FB 202 into an Ackermann GB3 (OBO Bettermann) Floor Box

NOTE: Position 2 requires the installation of the 995242 adapter plate over one of the 995241 adapter plate.

MK Electric CableLink Plus Single Pan floor box

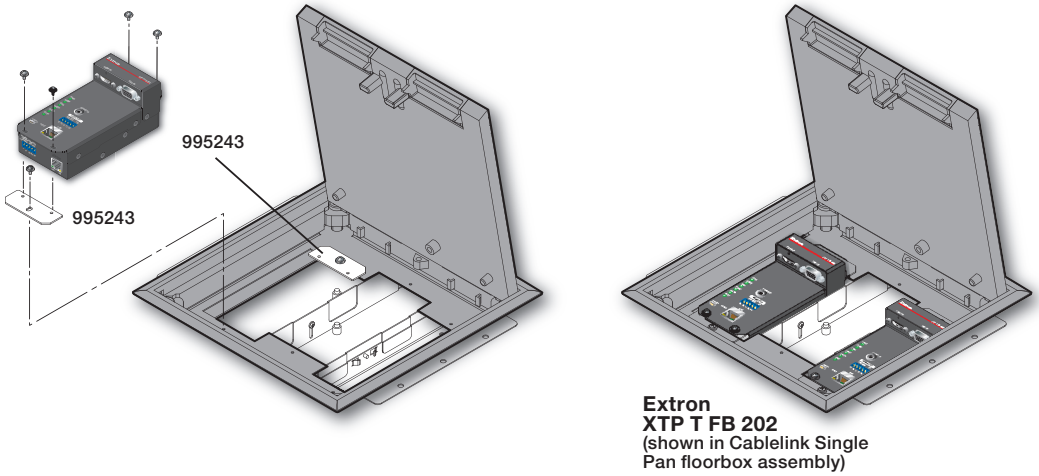


Figure 13. Mounting the XTP T FB 202 into an MK Electric CableLink Plus Single Pan Floor Box

ATTENTION: Do not install the XTP T FB 202 in position 2 (see figure **2** on page 5).

MK Electric CableLink Plus Modular floor box

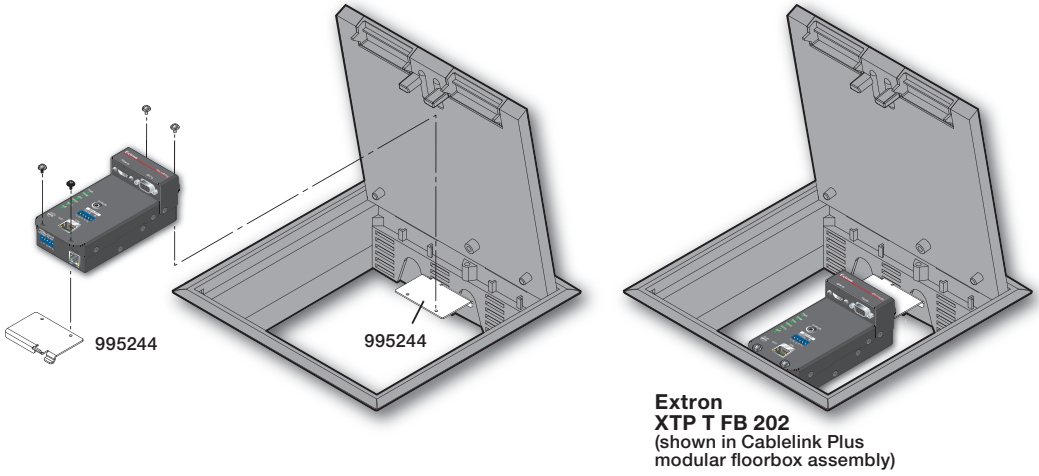


Figure 14. Mounting the XTP T FB 202 into an MK Electric CableLink Plus Modular Floor Box

Electraplan or PUK floor box

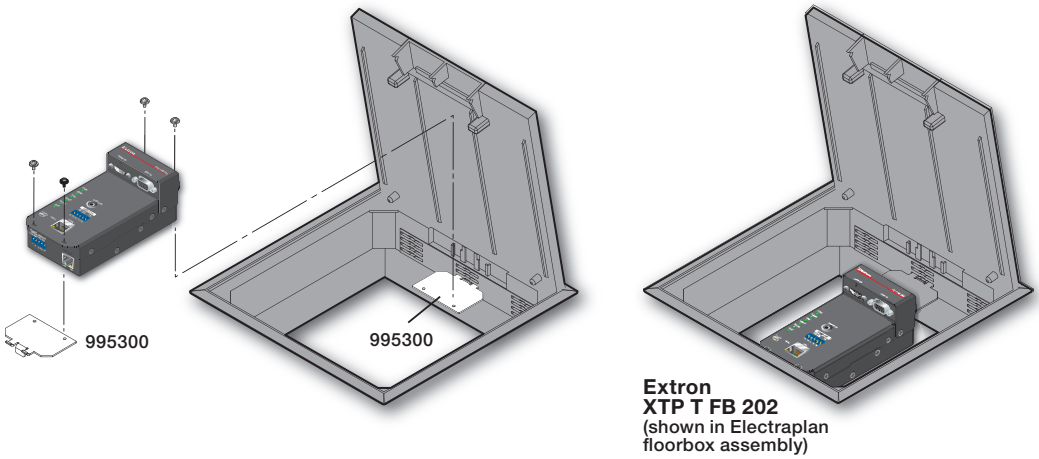


Figure 15. Mounting the XTP T FB 202 into an Electraplan or PUK Floor Box

Connection and Wiring Details

HDMI Connection

Use an Extron LockIt Lacing Bracket to secure an HDMI cable to the HDMI connector. The LockIt lacing bracket can be applied to the top or the side mounting screws. The following directions describe how to attach a LockIt lacing bracket to the top mounting screw.

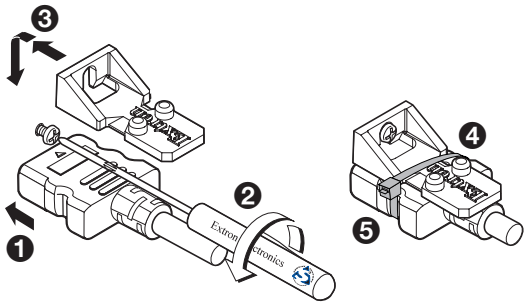


Figure 16. Installing the LockIt Lacing Bracket

1. Plug the HDMI cable into the panel connection (see figure 16, ❶).
2. Loosen the HDMI connection mounting screw from the panel (see ❷) enough to allow the LockIt lacing bracket to be placed over it. The screw does not have to be removed.
3. Place the LockIt lacing bracket on the screw and against the HDMI connector (see ❸), then tighten the screw to secure the bracket.

   ATTENTION: Do not overtighten the HDMI connector mounting screw. The shield it fastens to is very thin and can easily be stripped.

4. Loosely place the included tie wrap around the HDMI connector and the LockIt lacing bracket (see ❹).
5. While holding the connector securely against the lacing bracket, use pliers or similar tools to tighten the tie wrap, then remove any excess length (see ❺).

TP Cable Termination and Recommendations

Use the following pin configurations for twisted pair cables.

Straight-through Cable (for connection to a switch, hub, or router)			
TIA/EIA-T568A		TIA/EIA-T568B	
Pin	Wire Color	Pin	Wire Color
1	White-green	1	White-orange
2	Green	2	Orange
3	White-orange	3	White-green
4	Blue	4	Blue
5	White-blue	5	White-blue
6	Orange	6	Green
7	White-brown	7	White-brown
8	Brown	8	Brown

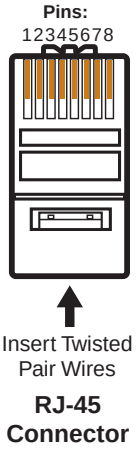


Figure 17. TP Cable Termination

Supported cables

The XTP T FB 202 is compatible with shielded twisted pair (F/UTP, SF/UTP, and S/FTP) and unshielded twisted pair (U/UTP) cables.

ATTENTION:

- Do not use Extron UTP23SF-4 Enhanced Skew-Free AV UTP cable or STP201 cable to link the XTP products.
- To ensure FCC Class A and CE compliance, STP cables and STP connectors are required.

Cable recommendations

Extron recommends using the following practices to achieve full transmission distances up to 330 feet (100 m) and reduce transmission errors.

- Use the following Extron XTP DTP 24 SF/UTP cables and connectors for the best performance:
  - **XTP DTP 24/1000** Non-Plenum 1000' (305 m) spool 22-236-03
  - **XTP DTP 24P/1000** Plenum 1000' (305 m) spool 22-235-03
  - **XTP DTP 24 Plug** Package of 10 101-005-02
- If not using XTP DTP 24 cable, at a minimum, Extron recommends 24 AWG, solid conductor, STP cable with a minimum bandwidth of 400 MHz.
- Terminate cables with shielded connectors to the TIA/EIA-T568B standard.
- Limit the use of more than two pass-through points, which may include patch points, punch down connectors, couplers, and power injectors. If these pass-through points are required, use shielded couplers and punch down connectors.

NOTE: When using STP cable in bundles or conduits, consider the following:

- Do not exceed 40% fill capacity in conduits.
- Do not comb the cable for the first 20 m, where cables are straightened, aligned, and secured in tight bundles.
- Loosely place cables and limit the use of tie wraps or hook and loop fasteners.
- Separate twisted pair cables from AC power cables.

RS-232 and IR Over XTP Communication

The RS-232 and IR Over XTP connector is for pass-through transmission of serial signals, such as projector control signals, and infrared data. To pass bidirectional serial command signals between XTP-compatible devices, connect a control device to the three leftmost poles (Tx, Rx, and G) of the 5-pole captive screw connector. To transmit and receive IR signals, connect a control device to the three rightmost poles (G, Tx, and Rx). The ground (G) pole is shared.

NOTE: RS-232 and IR data can be transmitted or received simultaneously (see figure 18 below for wiring considerations).

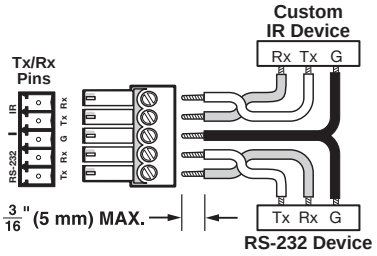


Figure 18. Wiring the RS-232 and IR Over XTP Connector

ATTENTION: The length of exposed wires is critical.

- The ideal length is 3/16 inch (5 mm).
- Longer bare wires can short together.
- Shorter wires are not as secure in the connectors and could be pulled out.

Power Connection

Apply power to the transmitter locally with the provided power supply or remotely with a power injector or an XTP matrix switcher.

ATTENTION: XTP remote power is intended for indoor use only. No part of the network that uses XTP remote power should be routed outdoors.

Local power

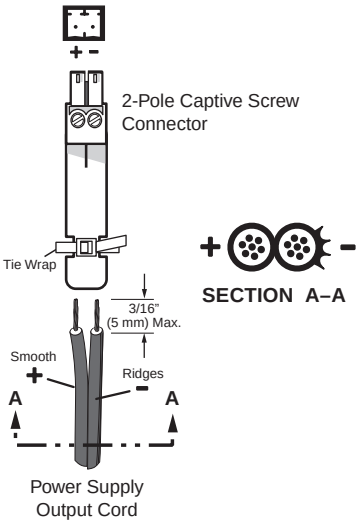


Figure 19. Power Wiring

The XTP T FB 202 can be connected to a local power supply.

WARNING: Electric shock hazard. The two power cord wires must be kept separate while the power supply is plugged in. Remove power before wiring.

ATTENTION:

- This product is intended to be supplied by a Listed Power Unit marked "Class 2" or "LPS," rated 12 VDC, 1.0 A minimum. Always use a power supply supplied by or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product.
- Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities. The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 75 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to a building structure or similar structure.
- Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the unit. The ridges on the side of the cord identify the power cord negative lead.
- The length of the exposed (stripped) copper wires is important. The ideal length is 3/16 inch (5 mm).

TIP: Do not tin the stripped power supply leads. Tinned wires are not as secure in the captive screw connectors and could be pulled out.

Use the supplied tie wrap to strap the power cord to the extended tail of the connector.

Remote power

The XTP T FB 202 can be powered remotely through an XTP Power Injector or through an XTP matrix switcher.

ATTENTION: XTP remote power is intended for indoor use only. No part of the network that uses XTP remote power should be routed outdoors.

Power injector

To power the XTP T FB 202 remotely with an XTP Power Injector, power one device locally (see **Local power** on page 15) and connect an XTP Power Injector to the XTP cable run along the XTP ports (see the *XTP Power Injector User Guide* for more installation information).

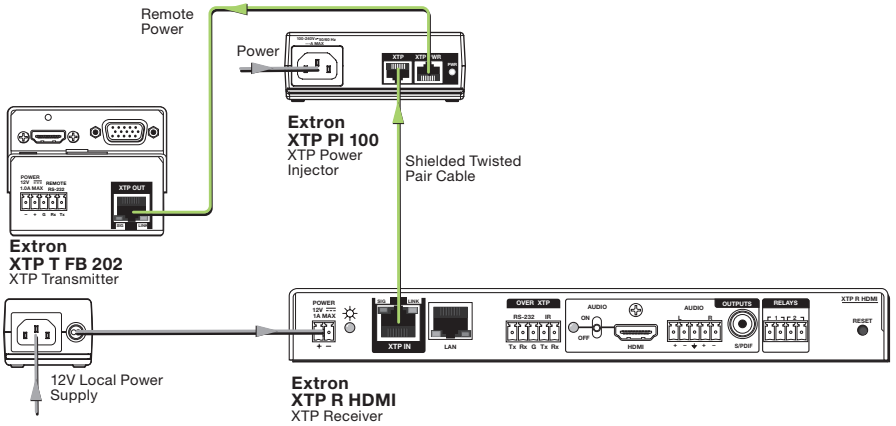


Figure 20. Typical Point-to-point Application with Remote Power

NOTE: The power injector provides remote power up to 330 feet with a STP cable with 24 AWG wire.

Direct power from an XTP matrix switcher

XTP matrix switchers have a fixed amount of power available to provide remote power to connected XTP devices (see the XTP matrix switcher user guide for more details). To manage available power from the XTP matrix switcher, use the XTP System Configuration Software.

Operation

The XTP T FB 202 can be controlled only by SIS commands (see **SIS Configuration and Control** on page 18) or the XTP System Configuration Software (see **XTP System Configuration Software** on page 23). This section contains basic information about operation details. Topics in this section include:

- **Switch Modes**
- **EDID**
- **Reset Modes**

Switch Modes

The XTP T FB 202 has two switch modes: normal and auto switch. In normal mode (default), inputs must be selected manually. In auto switch mode, the XTP T FB 202 prioritizes a specified input depending on availability. These modes must be enabled or disabled through SIS commands (see **Auto switch mode** commands on page 20) or the XTP System Configuration Software (see **Auto-input Switching panel** on page 32).

EDID

To manage EDID on the XTP T FB 202, use the XTP System Configuration Software (see **EDID Minder** on page 34). The XTP T FB 202 can record and save EDID in a user memory location, select a pre-defined EDID, or use EDID from a display connected to a receiver. EDID stored in the user memory location can come from the display connected to a receiver or a custom EDID imported through the XTP System Configuration Software.

NOTE: In matrix applications, EDID on the switcher is assigned by the matrix switcher using the XTP System Configuration Software.

Reset Modes

Use the recessed Reset button on the top panel of the transmitter (see figure 10, Ⓓ on page 9) to return the device to default settings or to restore factory-shipped firmware.

	Reset Mode Summary		
	Mode Activation	**Result**	**Purpose/Notes**
Factory Reset (Mode 1)	Press the recessed Reset button while applying power to the device. **NOTE:** After a mode 1 reset, update the device with the latest firmware version. DO NOT operate the firmware version that results from this mode reset.	The device reverts to the factory default firmware. **NOTE:** If you do not want to update the firmware or if you perform a mode 1 reset by mistake, cycle power to the device to return the firmware version running prior to the reset.	Use mode 1 to roll back to factory firmware for a single power cycle if an incompatibility issue arises.

SIS Configuration and Control

The XTP T FB 202 can be configured and controlled using Extron Simple Instruction Set (SIS) commands or the XTP System Configuration Software (see **XTP System Configuration Software** on page 23). This section contains basic SIS communication details and SIS commands and responses when connected directly to the XTP T FB 202. Topics in this section include:

- **Host Device Connection**
- **SIS Programming Guide**
- **Command and Response Tables for SIS Commands**

Host Device Connection

Use a computer running the HyperTerminal or Extron DataViewer utility, or a control system to enable serial control of the switcher. To connect directly to an XTP T FB 202, connect the computer to the XTP T FB 202 through the top panel USB Config port or the side panel RS-232 connector. The protocol for the serial port is as follows: 9600 baud, no parity, 8 data bits, 1 stop bit, no flow control.

SIS Programming Guide

Host-to-Device and Device-to-Host Communication

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the XTP T FB 202 determines that a command is valid, it executes the command and sends a response to the host device. All responses from the switcher to the host end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Device-Initiated Message

When the transmitter is connected through the serial port only and a local event occurs, the device responds by sending a message to the host.

The following copyright message is displayed after a power cycle via RS-232.

`© Copyright YYYY, Extron Electronics XTP T FB 2Ø2 Vx.xx, 6Ø-1383-12↵`

YYYY is the year. V*x.xx* is the firmware version number.

Error Responses

When the XTP T FB 202 receives an SIS command and determines that it is valid, it performs the command and sends the corresponding response to the host device. If the command is determined invalid or contains invalid parameters, the switcher returns an error response to the host. The error response codes are:

- E01 = Invalid input number
- E06 = Invalid switch attempt in this mode
- E10 = Invalid command
- E11 = Invalid preset number
- E12 = Invalid port number
- E13 = Invalid parameter
- E14 = Not valid for this configuration
- E17 = Invalid command for signal type

Using the Command and Response Tables for SIS Commands

The command and response tables begin on page 20. Figure 21 shows the hexadecimal equivalent of ASCII characters used in the command and response tables.

NOTE: Upper- and lowercase text can be used interchangeably unless otherwise stated.

Space →

ASCII to Hex Conversion Table										Esc	1B	CR	0D	LF	0A
	20	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
0	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	40	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	60	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F

Figure 21. ASCII to Hexadecimal Conversion

Symbol Definitions

- ↵ = Carriage return and line feed
- | or ← = Carriage return with no line feed
- • = Space
- W or Esc = Escape key

Command and Response Tables for SIS Commands

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Input Commands			
Video input selection			
Select input	X1 !	In X1 ↵	Select video input X1.
View the selected input	!	In X1 ↵	View the selected video input.
Auto switch mode			
Disable auto switch mode	Esc ØAUSW ←	AuswØ ↵	Switch inputs manually.
Set priority to the highest numbered active input	Esc 1AUSW ←	Ausw1 ↵	Automatically switch to the highest numbered active input (default).
Set priority to the lowest numbered active input	Esc 2AUSW ←	Ausw2 ↵	Automatically switch to the lowest numbered active input.
View setting	Esc AUSW ←	Ausw X3 ↵	View the auto switch mode.
Audio Configuration Commands			
Audio gain and attenuation			
NOTE: Gain and attenuation commands are case-sensitive.			
Set gain	X5 G	Aud X7 ↵	Set gain to X5.
Set attenuation	X6 g	Aud X7 ↵	Set attenuation to X6.
Increment audio level	+G or +g	Aud X7 ↵	Increase the audio level.
Decrement audio level	-G or -g	Aud X7 ↵	Decrease the audio level.
View audio level	G or g	Aud X7 ↵	View the audio level.
Audio input selection			
Set audio input format	Esc I X2 AFMT ←	AfmtI X2 ↵	Set the audio input format to X2.
View audio input format	Esc IAFMT ←	AfmtI X2 ↵	View the audio input format.
Black signal resolution			
Set black signal resolution	Esc A X8 AFMT ←	AfmtA X8 ↵	Set the black signal resolution to X8.
View black signal resolution	Esc AAFMT ←	AfmtA X8 ↵	View the black signal resolution.

NOTE:

X1 = Input selection
- 1 = VGA
- 2 = HDMI (default)

X2 = Audio input format
- Ø = auto (default)
- 1 = digital embedded
- 2 = analog

X3 = Auto switch mode
- Ø = disable
- 1 = priority to the HDMI input (default)
- 2 = priority to the VGA input

X5 = Audio gain adjustment
- Ø - 24 = decibels above 0 (Ø = default)

X6 = Audio attenuation adjustment
- –18 - Ø = decibels below 0 (Ø = default)

X7 = Audio level adjustment
- –18 - +24 in decibels (Ø = default)

X8 = Black signal resolution
- 2 = 720p @ 50 Hz
- 4 = 720p @ 60 Hz (default)
- 6 = 1080p @ 60 Hz

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Black signal for audio only			
NOTE: The switcher uses a black signal to simulate a 720p or 1080p, 50 Hz or 60 Hz signal so audio can be passed without video.			
Enable black signal	Esc B1AFMT←	AfmtB X4 ↵	Enable a black signal for audio only.
Disable black signal	Esc BØAFMT←	AfmtB X4 ↵	Disable the black signal.
View black signal setting	Esc BAFMT←	AfmtB X4 ↵	View the black signal setting.
Picture Adjustment Commands (Analog Only)			
Pixel phase			
Set a pixel phase value	Esc X12 PHAS←	Phas X12 ↵	Adjust the pixel phase to X12.
Increment value	Esc +PHAS←	Phas X12 ↵	Increase the pixel phase.
Decrement value	Esc -PHAS←	Phas X12 ↵	Decrease the pixel phase
View pixel phase value	Esc PHAS←	Phas X12 ↵	Show the pixel phase value
Horizontal shift			
Set horizontal shift value	Esc X13 HCTR←	Hctr X13 ↵	Set horizontal location of first active pixel in active window.
Increment value	Esc +HCTR←	Hctr X13 ↵	Increase the shift value (move the image to the right).
Decrement value	Esc -HCTR←	Hctr X13 ↵	Decrease the shift value (move the image to the left).
View horizontal shift value	Esc HCTR←	Hctr X13 ↵	Show the horizontal location of the first active pixel in the active window.
Vertical shift			
Set vertical shift value	Esc X13 VCTR←	Vctr X13 ↵	Set vertical location of first active pixel in active window.
Increment value	Esc +VCTR←	Vctr X13 ↵	Increase the shift value (move the image down).
Decrement value	Esc -VCTR←	Vctr X13 ↵	Decrease the shift value (move the image up).
View vertical shift value	Esc VCTR←	Vctr X13 ↵	Show vertical location of the first active pixel in active window.
Image reset			
Execute an image reset	1A	Aadj1↵	Set picture adjustment settings to the default values.
Presets Commands			
Input presets			
Save an input preset	X14 ,	Spr X14 ↵	Save a configuration to preset X14.
Recall an input preset	X14 .	Rpr X14 ↵	Recall a configuration from preset X14.

NOTE:
- X4 = Enable or disable — Ø = off or disable; 1 = on or enable (default)
- X12 = Pixel phase — Ø-255 (128 = default)
- X13 = Horizontal or vertical shift — Ø-65,535 (32,768 = default)
- X14 = Preset number — 1-8

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
EDID Commands			
NOTE: For EDID management, use the XTP System Configuration Software (see **EDID Minder** on page 34).			
Advanced Configuration Commands			
HDCP authorized device (HDMI input only)			
HDCP authorized device On	Esc E1HDCP←	HdcpE1↵	HDCP authorized device on (default).
HDCP authorized device Off	Esc EØHDCP←	HdcpEØ↵	HDCP authorized device off.
Query HDCP authorized device status	Esc EHDCP←	HdcpE X20 ↵	View the HDCP authorized device status.
Test pattern			
Set a test pattern	X10 J	Tst X10 ↵	Set a test pattern or disable one.
View the current test pattern	J	Tst X10 ↵	View the current test pattern.
Factory defaults			
System reset	Esc ZXXX←	Zpx↵	Reset unit to factory default.
Status			
View input signal presence	ØLS	Frq X15 [1] X15 [2] ↵	View the input signal presence of each input. [1] = VGA input [2] = HDMI input
Query HDCP input	Esc IHDCP←	HdcpIØ X21 ↵	View the HDCP input status of the HDMI input.
Query firmware version	Q	x.xx↵	View the firmware version.
Query full firmware version	*Q	x.xx.xxxx↵	View the full firmware version.
Query part number	N	60-1383-12	View the device part number.

NOTE:	X10 = Color bar test pattern	Ø = disable (default) 1 = 720p @ 50 Hz 3 = 720p @ 60 Hz 5 = 1080p @ 60 Hz
	X15 = Signal presence	Ø = video or TMDS not detected 1 = video or TMDS detected
	X21 = HDCP status	Ø = no source 1 = HDCP compliant source 2 = non-HDCP compliant source
	X20 = HDCP Authorization	Ø = HDCP authorization off 1 = HDCP authorization on (default)

XTP System Configuration Software

The XTP T FB 202 can be configured and controlled using Extron Simple Instruction Set (SIS) commands (see **SIS Configuration and Control** on page 18) or the XTP System Configuration Software. This section contains installation and configuration procedures for the XTP System Configuration Software for configuring and controlling the XTP T FB 202. Topics in this section include:

- **Installing the XTP System Configuration Software**
- **Using the XTP System Configuration Software**

Installing the XTP System Configuration Software

The program is available for download on the Extron website, **www.extron.com**.

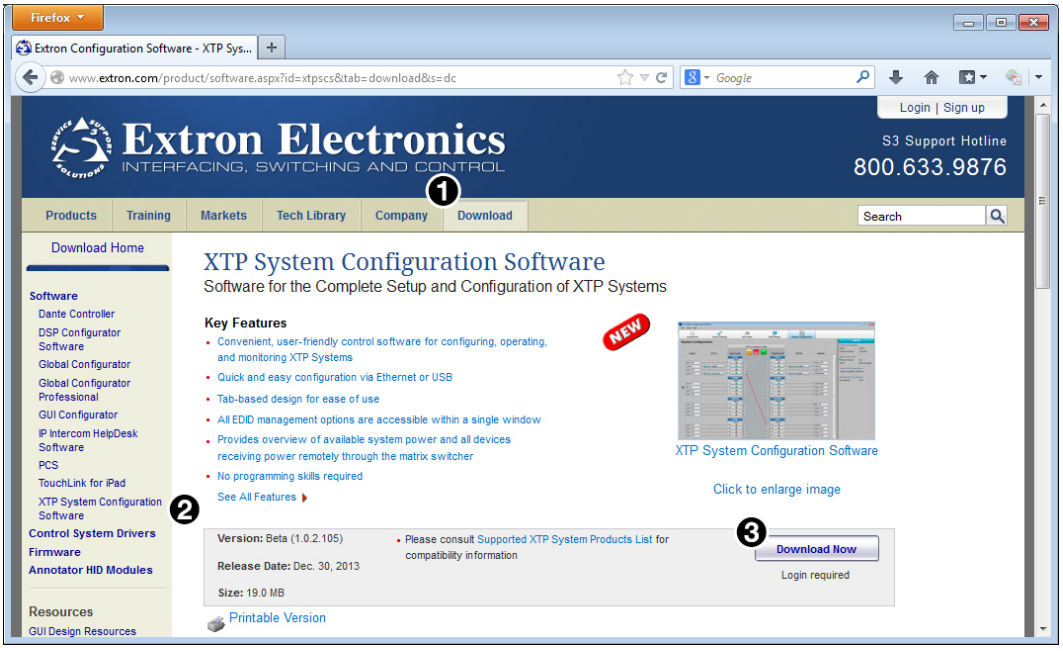


Figure 22. Extron Website Download Page

1. On the Extron website, click the **`Download`** tab (see figure 22, ❶).
2. From the left sidebar, click the **`XTP System Configuration Software`** link (see figure 22, ❷).
3. Click the **`Download Now`** button (see figure 22, ❸).
4. Submit any required information to start the download. Note where the file is saved.
5. Open the executable (.exe) file from the location where the file was saved.
6. Follow the instructions that appear on the screen. By default, the installation creates a directory in the Program Files folder named “Extron Electronics\XTP System Configuration.”

Using the XTP System Configuration Software

The XTP T FB 202 can be controlled directly from the front panel config port or remotely from an XTP matrix switcher.

Connections

When opening the XTP System Configuration Software, the Connections screen opens first. This screen is used to establish communication with an XTP device via USB (see **Config port** on page 10).

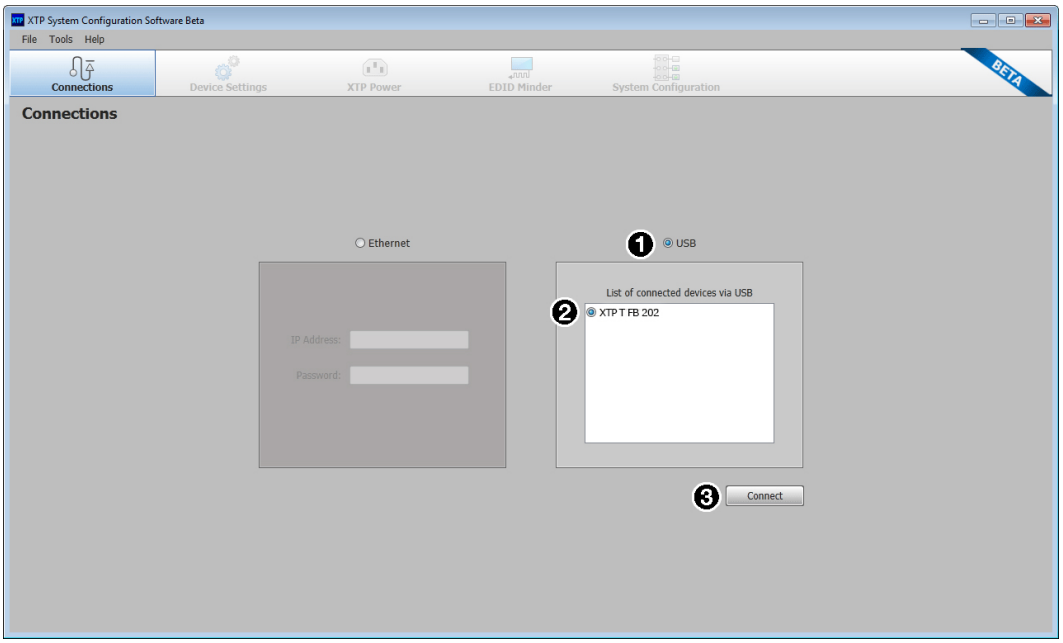


Figure 23. Connections Screen

1. From the Connections screen, select the **USB** radio button (see figure 23, ❶).
2. Select the connected device to be controlled from the displayed list (see ❷).
3. Click the **Connect** button (see ❸). The Device Settings screen opens.

Top Menu

The top menu contains three menus for configuring software settings.

File menu

The **File** menu contains options for disconnecting and exiting the program. To access the menu, click the **File** menu.

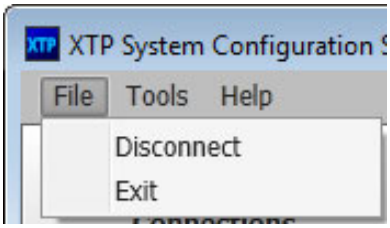


Figure 24. File Menu

Disconnect

This option disconnects the XTP System Configuration Software from the connected device.

From the **File** menu, select **Disconnect**. The Connections screen opens.

NOTE: If the device is already disconnected, the **Disconnect** option is disabled until a device is connected.

Exit

This option disconnects the receiver from the software and closes the application.

From the **File** menu, select **Exit**. The application closes.

Tools menu

The **Tools** menu contains an option for updating firmware. To access this menu, click the **Tools** menu.

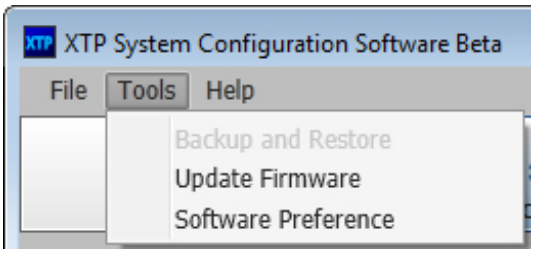


Figure 25. Tools Menu

NOTE: The **Backup and Restore** and **Software Preference** options are not available when directly connected to the XTP T FB 202 .

Update Firmware

This option uploads firmware from the host device to the connected device.

NOTE: If necessary, download new firmware from the Extron website (see **Downloading Firmware** on page 38).

1. From the **Tools** menu, select **Update Firmware**. A dialog box opens to ask permission to disconnect from the device.

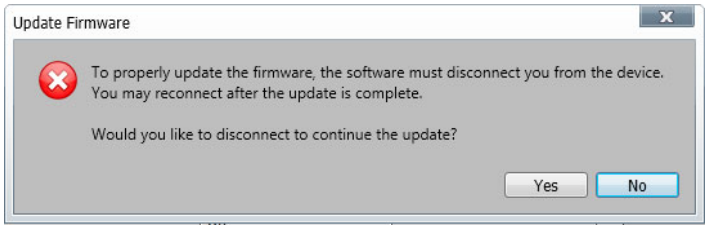

Update Firmware
To properly update the firmware, the software must disconnect you from the device.
You may reconnect after the update is complete.
Would you like to disconnect to continue the update?
Yes
No

Figure 26. Confirm Disconnect Dialog Box

2. Click the **Yes** button to disconnect from the device and continue with the firmware update process. The Update Firmware dialog box opens.

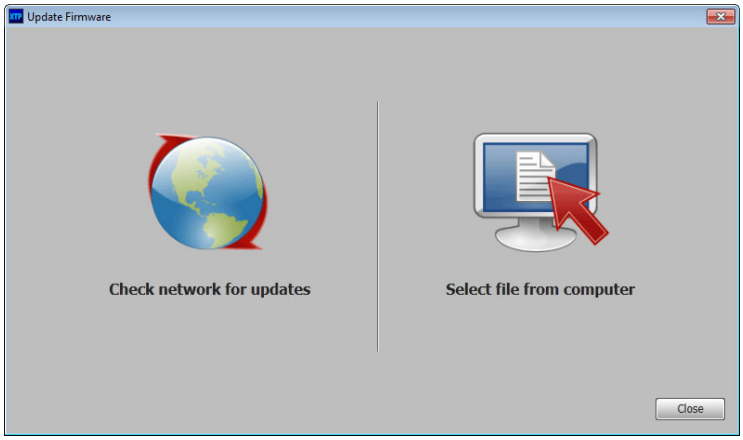


Figure 27. Update Firmware Dialog Box

3. Click the **Check network for updates** icon to search the LAN or WAN for firmware files or click the **Select file from computer** icon to select a firmware file from the connected host device. The Browse dialog box opens.
4. Select the desired firmware file and click the **Open** button.
5. Click the **Close** button after the firmware finishes updating.

Help menu

The **Help** menu contains XTP System Configuration Software information, the help file, and a link to the Extron website.

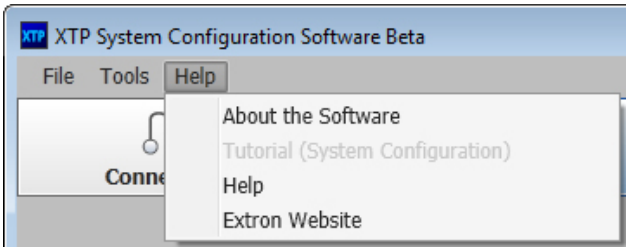


Figure 28. Help Menu

NOTE: The **Tutorial (System Configuration)** option is not available when directly connected to the XTP T FB 202.

About the Software

This option provides basic information about the XTP System Configuration Software, including version number and copyright information.

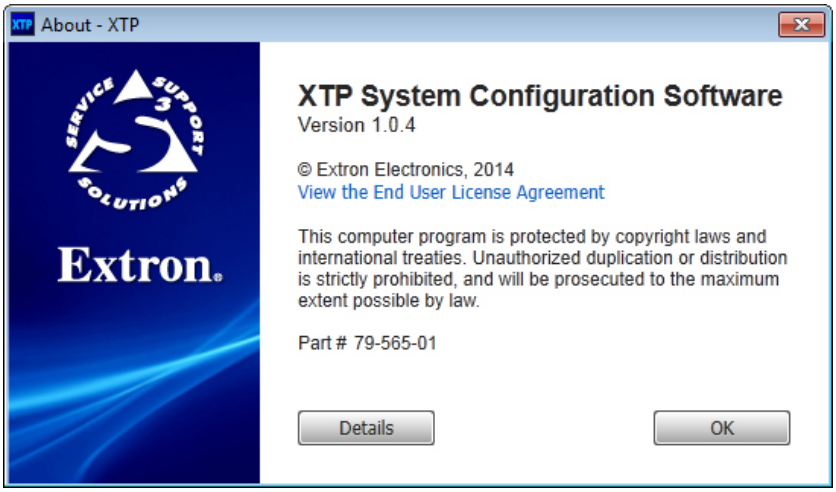

About - XTP
XTP System Configuration Software
Version 1.0.4
© Extron Electronics, 2014
View the End User License Agreement
This computer program is protected by copyright laws and international treaties. Unauthorized duplication or distribution is strictly prohibited, and will be prosecuted to the maximum extent possible by law.
Part # 79-565-01
Details
OK
Extron

Figure 29. About - XTP Dialog Box (Example)

1. From the **Help** menu, select **About the Software**. The About - XTP dialog box opens.
2. Click the **Details** button for more information.
3. Click the **OK** button to close the dialog box.

Help

This option opens the XTP System Configuration Software help file in a Web browser.

From the **Help** menu, select **Help**.

Extron Website

This option opens the Extron website in a Web browser.

From the **Help** menu, select **Extron Website**.

Device Settings

The Device Settings screen allows a user to view and edit various device settings for the device directly connected to the host device. Click the **Device Settings** icon (see figure 30, ❶) on the Global Navigation bar to open the Device Settings screen.

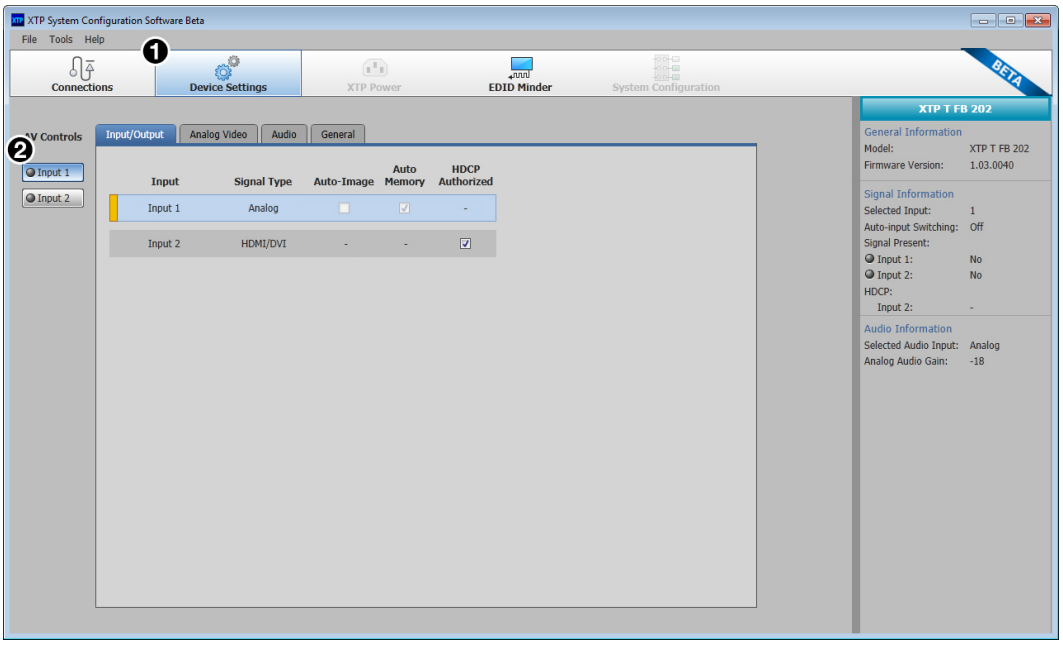
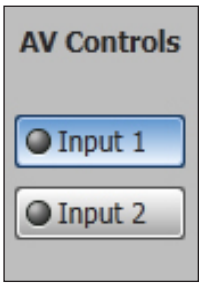


Figure 30. Transmitter Device Settings Screen

AV Controls panel

The AV Controls panel, located on the left, is used to selection an input.



❷ **Input Selection** — Click an **Input** button to select an input. As a new input is selected, the summary within the panel changes to reflect the currently selected input.

NOTE: The signal indicators on the AV input buttons display green when a signal is present on the corresponding input or gray when there is no signal present.

Input/Output tab

Click the **`Input/Output`** tab (see figure 31, ❶) to open the Input/Output screen. It contains input information and options to apply automatic settings to individual inputs.

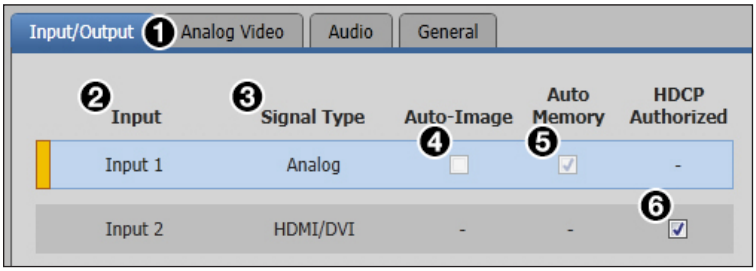


Figure 31. Input/Output Tab

❷ **Input Name** — Displays the input name.

❸ **Signal Type** — Displays the signal type of each input. Input 1 is `analog`. Input 2 is `HDMI/DVI`.

❹ **Auto-Image** — Attempts to size and center the input signal based on the aspect ratio setting. Auto-Image is applied whenever there is a change in the input sync.

❺ **Auto Memory** — Recalls input and image settings for signals that have previously been applied. When it is disabled, the XTP T UWP 202 treats every newly applied input as a new source.

❻ **HDCP Authorization** — Select either **`HDCP Authorized`** check box to have input 2 report as an HDCP authorized device. If the box is not checked, the source will be blocked from encrypting its output. This may result in some content not being passed by the source device.

NOTE: HDCP authorization is for the HDMI input only.

Analog Video tab

Click the **Analog Video** tab (see figure 32, ❶) to open the Analog Video screen. It contains signal sampling, image shifting, and saving and recalling input preset options.

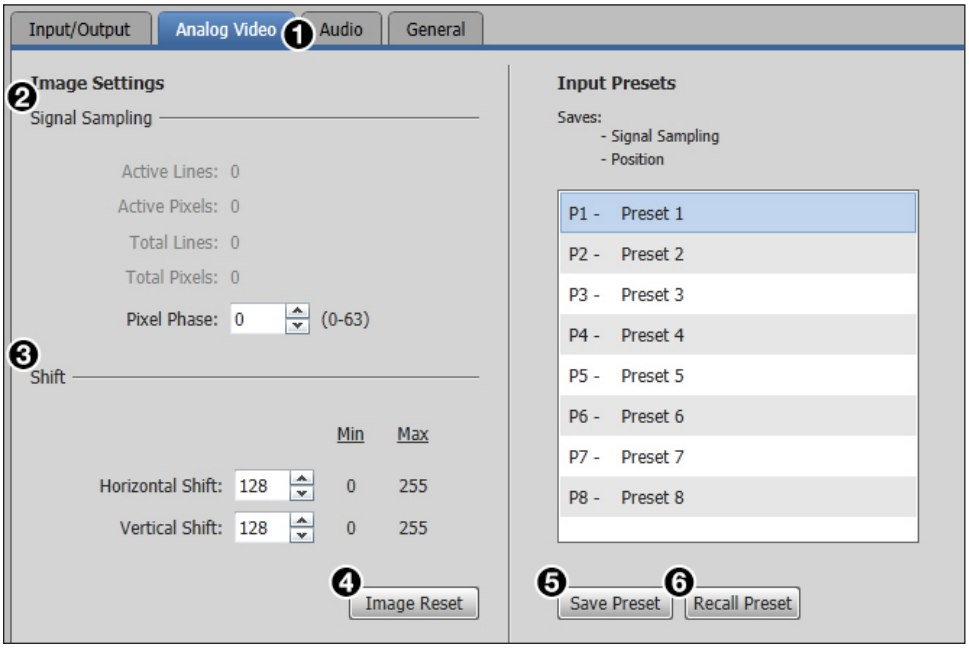


Figure 32. Analog Video Tab

Signal Sampling panel

Signal sampling optimizes the input signal to the switcher for input 1.

❷ **Signal Sampling** — To adjust signal sampling settings, enter a value within acceptable range displayed in parentheses to the right of the corresponding field or click the **Up** and **Down** arrows.

Shift panel

Shifting moves the position of an image.

❸ **Horizontal and Vertical Shift** — To adjust the horizontal and vertical shift settings, enter a value within the Min and Max values displayed to the right of the corresponding field or click the **Up** or **Down** arrows.

❹ **Image Reset** — Click the **Image Reset** button to set pixel phase, horizontal shift, and vertical to the default values.

Input Presets panel

Input presets save signal sampling and shift settings to be recalled later.

❺ **Save Preset** — To save a preset, select one from the list of presets and click the **Save Preset** button.

❻ **Recall Preset** — To recall a saved preset, select the desired preset from the list of presets and click the **Recall Preset** button.

Audio tab

Click the **Audio** tab (see figure 33, ❶) to open the Audio screen. It contains settings for input format and analog audio gain.

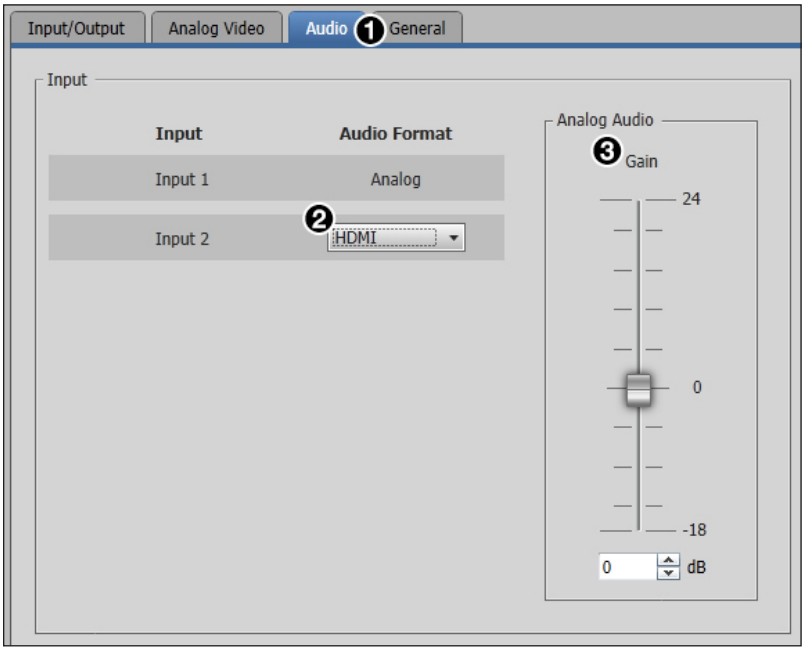


Figure 33. Audio Tab

Audio input format panel

❷ **Audio Input Format** — From the **Audio Format** drop-down list, select the format for input 2. It can be `Auto`, `HDMI`, or `Analog`.

❸ **Analog Audio Gain** — Click and drag the handle of the **Gain** slider, or enter a value in the field or click the **Up** or **Down** arrow to adjust the analog input gain.

General tab

Click the **General** tab (see figure 34, ❶) to open the general screen. It contains settings for auto switch mode and factory reset.

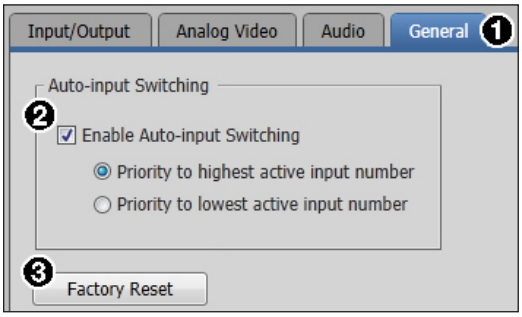


Figure 34. General Tab

Auto-input Switching panel

❷ **Auto-input Switching** — Click the **Enable Auto-Input Switching** check box to enable auto switch mode. Two settings are available for this mode.

- Click the **Priority to highest active input number** radio button to automatically switch to the highest numbered active input (HDMI).
- Click the **Priority to lowest active input number** radio button to automatically switch to the lowest numbered active input (VGA).

Factory reset

❸ **Factory Reset** — Click the **Factory Reset** button to reset the transmitter to factory settings except for firmware.

NOTE: This is the same as the Esc ZXXX SIS command (see the **System reset** command on page 22).

Device Information panel

The Device Information panel displays device information and settings.

General Information section

❶ **Model** — Displays the device model.

❷ **Firmware Version** — Displays the full firmware version.

Signal Information section

❸ **Selected Input** — Displays the input number of the currently selected input.

❹ **Auto-Input Switching** — Displays the On or Off status of auto switch mode.

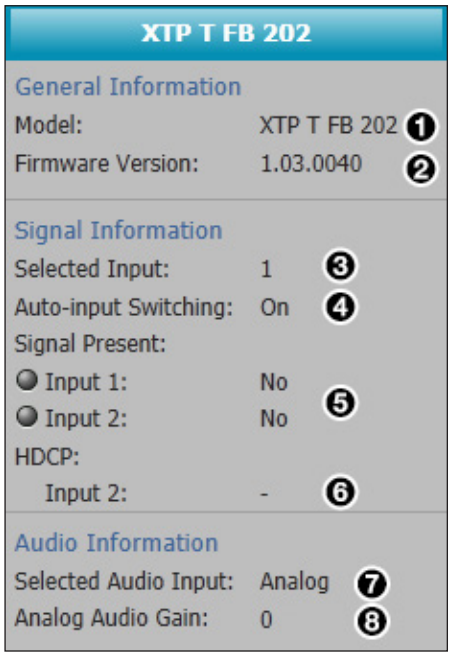
❺ **Signal Present** — Displays the signal presence of the inputs.

❻ **HDCP** — Displays the HDCP status of input 2.

Audio Information section

❼ **Selected Audio Input** — Displays the input number of the currently selected audio input.

❽ **Analog Audio Gain** — Displays the analog audio gain in dB.



EDID Minder

Use the EDID Minder screen to assign unique EDID to the input or match current output resolutions to the input. Click the **EDID Minder** icon (see figure 35, ❶) on the global navigation bar. The EDID Minder screen opens.

The EDID Minder screen displays a table of EDID options and connected output devices, which are each represented by output display icons.

- Factory default EDID options are displayed in blue.
- Connected output resolutions and devices are displayed in green.
- Custom loaded or saved EDID options are displayed in yellow.

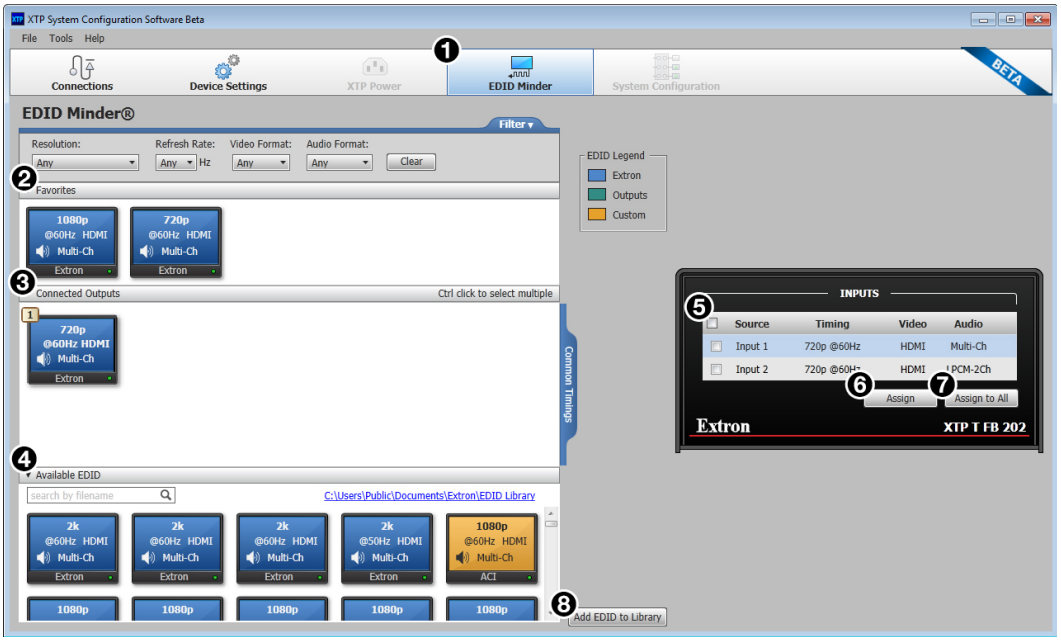


Figure 35. EDID Minder Screen

Assign EDID

To assign EDID to selected inputs:

1. Select an available EDID setting (represented by a blue, green, or yellow output display icon) from the Favorites, Connected Outputs, or Available EDID panel (see ❷-❹).
2. In the list of inputs on the right side of the screen, select the check box of the connected input (see ❺).
3. Click the **Assign** button below the input area (see ❻).

TIP: Alternatively, EDID can be assigned by dragging and dropping the desired EDID onto the input.

To assign EDID to all inputs:

1. Select an available EDID setting (represented by a blue, green, or yellow output display icon) from the Favorites, Connected Outputs, or Available EDID panel (see ❷-❹).
2. Below the list of inputs on the right side of the screen, click the **Assign to All** button (see ❼).

Import EDID

1. On the EDID Minder screen, click the **Add EDID to Library** button (see figure 35, ❽). The Browse window opens.
2. Select the desired EDID file and click **Open**. The EDID appears in the Available EDID panel (see figure 35, ❹).
3. Assign the EDID from the Available EDID panel to import the EDID setting to the device.

Save output EDID

1. On the EDID Minder screen, right-click on the desired EDID setting in the **Connected Outputs** panel (see figure 35, ❸).
2. Select the **Save EDID to PC** option. The EDID setting is saved to the connected PC. Alternatively, right-click on the desired EDID, select **Copy**, and then **Paste** the EDID into the Favorites or Available EDID panel.

Set favorite EDID

Commonly used EDID settings can be added to the Favorites panel for quick access.

1. Click and drag the desired EDID from the Connected Outputs or the Available EDID panel to the Favorites panel. The EDID setting is copied to the Favorites panel (see figure 35, ❷). Alternatively, right-click the desired EDID and select **Copy**. Then **Paste** the EDID setting into the Favorites panel.

EDID filters

The filters can be used to easily and quickly locate specific EDID. Selectable filters include:

❶ Resolution
❷ Refresh rate
❸ Video format
❹ Audio format

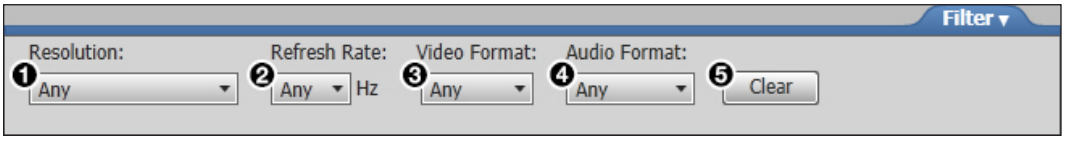


Figure 36. EDID Minder Filters

To use a filter or combination of filters:

1. Select an EDID setting from one of the drop-down lists of the associated filter (see figure 36, ❶-❹). The available EDID options that match the filter selection are displayed in their respective panel.
2. Repeat step 1 to apply more filters.

To clear the currently applied filters:

1. Click the **Clear** button next to the filters (see figure 36, ❺). All filters are reset.

Common timings

This function automatically displays available EDID settings that are common among multiple selected outputs.

1. Hold <Ctrl> and click the desired outputs in the Connected Outputs panel. The **Common Timings** tab appears, listing the EDID settings common among the selected outputs.
2. Select the desired common EDID setting. The EDID will be shown in the Available EDID panel.

Reference Information

This section contains instructions for updating firmware. Topics in this section include:

- **Updating Firmware with Firmware Loader**

Updating Firmware with Firmware Loader

To upload and update firmware for the XTP T FB 202, download the new firmware to a connected computer and upload the firmware with the Firmware Loader utility.

Downloading Extron Firmware Loader

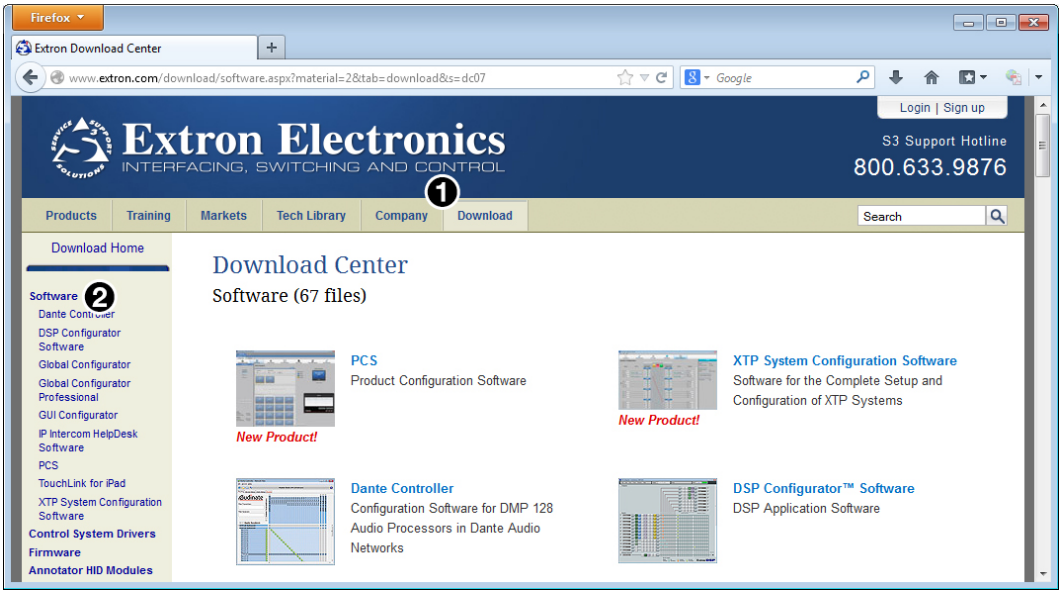


Figure 37. Locating Firmware Loader Software on the Extron Website

1. On the Extron website, **www.extron.com**, click the **Download** tab (see figure 37, ❶).
2. On the left sidebar, click the **Software** link (see ❷).

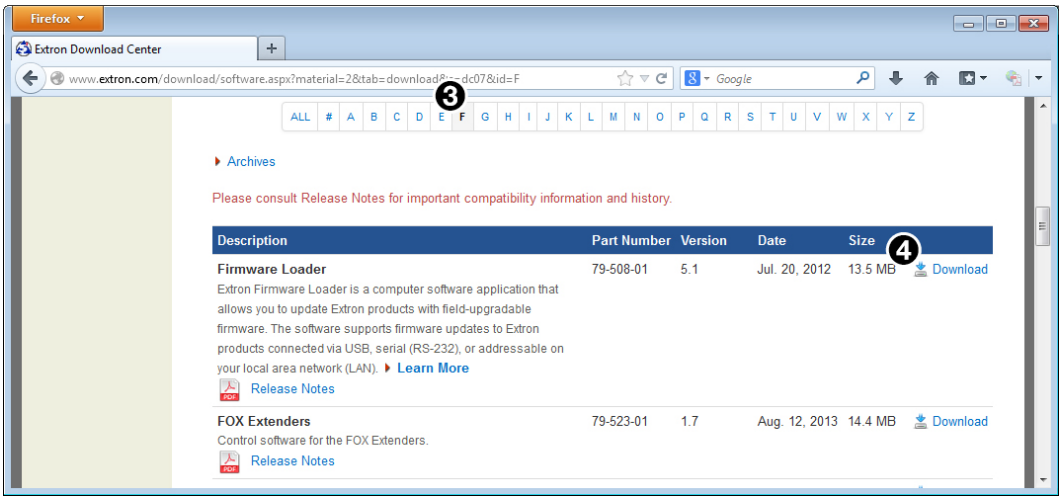

Firefox
Extron Download Center
www.extron.com/download/software.aspx?material=2&tab=download&c=dc07&id=F
Google
3
ALL # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Archives
Please consult Release Notes for important compatibility information and history.
Description
Part Number
Version
Date
Size
4
Firmware Loader
79-508-01
5.1
Jul. 20, 2012
13.5 MB
Download
Extron Firmware Loader is a computer software application that allows you to update Extron products with field-upgradable firmware. The software supports firmware updates to Extron products connected via USB, serial (RS-232), or addressable on your local area network (LAN).
Learn More
Release Notes
FOX Extenders
79-523-01
1.7
Aug. 12, 2013
14.4 MB
Download
Control software for the FOX Extenders.
Release Notes

Figure 38. Firmware Loader Download Page

3. Click the **F** link and navigate to Firmware Loader (see figure 38, ❸).
4. Click the **Download** link on the right that corresponds with the program (see ❹).
5. Submit any required information to start the download. Note where the file is saved.

Installing Firmware Loader

1. Once Firmware Loader has been downloaded, run the .exe file from the save location. The installation wizard window opens.
2. Follow the instructions on the Installation Wizard screens to install Firmware Loader on the computer.

Downloading Firmware

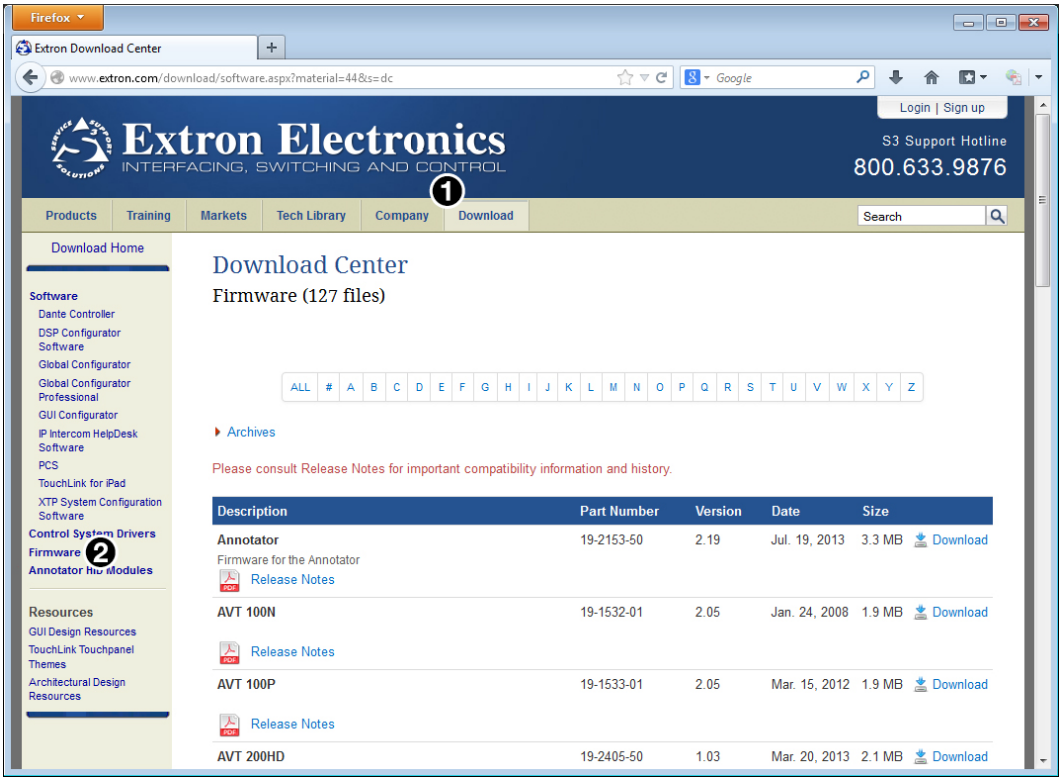


Figure 39. Downloading Firmware from the Extron Website

1. On the Extron website, **www.extron.com**, click the **Download** tab (see figure 39, ❶).
2. On the left sidebar, click the **Firmware** link (see ❷).
3. Navigate to the XTP T FB 202.
4. Ensure the available firmware version is a later version than the current one on the device.

   NOTE: The firmware release notes are a PDF file that provides details about the changes between different firmware versions. The file can be downloaded from the same page as the firmware.

5. Click the **Download** link to the right of the desired device.
6. Submit any required information to start the download. Note where the file is saved.

Installing Firmware with Firmware Loader

Use the Firmware Loader utility to upload firmware to the transmitter when connected directly to the device.

1. Connect the host device to the front panel USB port.
2. Open Firmware Loader and establish a connection between the computer and the device. The Add Device... dialog box opens.

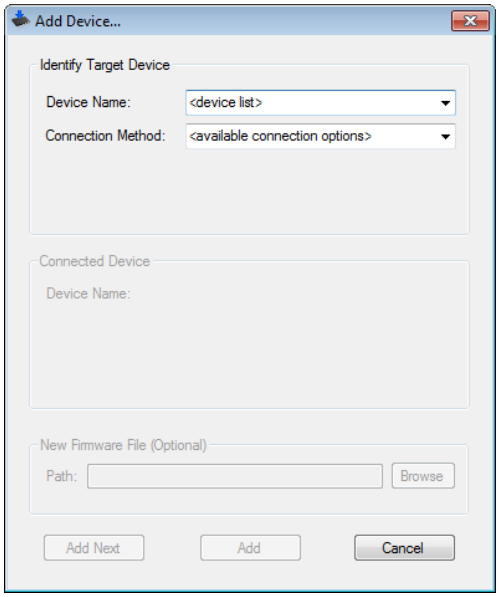


Figure 40. Add Device... Dialog Box

3. From the **Device Name** drop-down list, select **XTP T FB 202**.
4. From the **Connection Method** drop-down list, select the method of connection.
5. Depending on the connection method, additional options appear. Make the appropriate selections for the current connection method.
6. Click the **Connect** button.
7. Click the **Browse** button in the New File Firmware (Optional) panel.
8. On the Open dialog box, navigate to the new firmware file, which has an .S19 extension, and select it.

ATTENTION: Valid firmware files must have the file extension .S19. A file with any other extension is not a firmware upgrade for this device and could cause the device to stop functioning.

9. Click the **Open** button. The Browse dialog box closes.
10. Click the **Add** button. The Add Device... dialog box closes and the device and firmware are listed in the Firmware Loader main window.
11. Click the **Begin** button to start the upload process.
12. Close Firmware Loader when the **Remaining Time** field shows **00.00.00**, the **Progress** column is **100%**, and the **Status** field is **completed**.

Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:
Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

Japan:
Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe and Africa:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:
Extron Asia Pte Ltd
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: 714.491.1500 or 800.633.9876 **Europe**: 31.33.453.4040
Asia: 65.6383.4400 **Japan**: 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

Extron Headquarters		Extron Europe	Extron Asia	Extron Japan	Extron China	Extron Middle East	Extron Korea	Extron India
+1.800.633.9876 (Inside USA/Canada Only)		+800.3987.6673 (Inside Europe Only)	+65.6383.4400	+81.3.3511.7655	+86.21.3760.1568	+971.4.299.1800	+82.2.3444.1571	1800.3070.3777 Inside India Only
Extron USA - West	Extron USA - East	+31.33.453.4040	+65.6383.4664 FAX	+81.3.3511.7656 FAX	+86.21.3760.1566 FAX	+971.4.299.1880 FAX	+82.2.3444.1575 FAX	+91.80.3055.3777
+1.714.491.1500	+1.919.850.1000	+31.33.453.4050 FAX						+91.80.3055.3737 FAX
+1.714.491.1517 FAX	+1.919.850.1001 FAX							

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